BITUMEN AFRICA

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SPECIFICATION OF BITUMEN
PENETRATION GRADE 60/70

Bitumen 60/70	Test method	Unit	Specification
Specific gravity @ 25°C	ASTM D70	Kg/cm3	1.01/1.06
Penetration @25°C	ASTM D5	mm/10	60/70
Softening point °C	ASTM D36	°C	49/56
Ductility @25 °C	ASTM D113	cm	100 min
Loss on heating(wt) %	ASTM DO	wt %	0.2 max
Drop in penetration after heating %	ASTM D5-D6	%	20 max
Flashpoint °C	ASTM D92	°C	232 min
Solubility in Trichloroethylene	ASTM D2042	wt %	92 min
Spot test	A.A.S.H.O.T102		Negative

BITUMEN AFRICA

BITUMEN PENETRATION GRADE 80/100

SPECIFICATION OF BITUMEN PENETRATION GRADE 80/100

Bitumen 80/100	Test method	Unit	Specification
Specific gravity @ 25°C	ASTM D70	Kg/cm3	1.01/1.06
Penetration @25°C	ASTM D5	mm/10	80/100
Softening point °C	ASTM D36	°C	42/50
Ductility @25 °C	ASTM D113	cm	100 min
Loss on heating(wt) %	ASTM D6	wt %	0.2 max
Drop in penetration after heating %	ASTM D5-D6	%	20 max
Flash point °C	ASTM D92	°C	250 min
Solubility is CS2(wt) %	ASTM D4	wt %	99.5 min
Spot test	A.A.S.H.O.T102		Negative

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BITUMEN PENETRATION GRADE 85/100

SPECIFICATION OF BITUMEN PENETRATION GRADE 85/100

Bitumen 85/100	Test method	Unit	Specification
Specific gravity @ 25°C	ASTM D70	Kg/cm3	1.01/1.06
Penetration @25°C	ASTM D5	mm/10	85/100
Softening point °C	ASTM D36	°C	41/49
Ductility @25 °C	ASTM D113	cm	100 min
Loss on heating(wt) %	ASTM DO	wt %	0.2 max
Drop in penetration after heating %	ASTM D5-D6	%	20 max
Flash point °C	ASTM D92	°C	250 min
Solubility is CS2(wt) %	ASTM D2042	wt %	99.5 min
Spot test	A.A.S.H.O.T102		Negative

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BITUMEN PENETRATION GRADE 20/30

SPECIFICATION OF BITUMEN PENETRATION GRADE 20/30

Bitumen 20/30	Test method	Unit	Specification
Penetration @25°C	EN 1426	mm/10	20/30
Softening point °C	EN 1427	°C	41/49
Kinematic Viscosity @ 135°C	EN 12595	mm2/s	530 min
Flash point °C	EN 22592	°C	240 min
Solubility is CS2(wt) %	EN 12592	wt %	99 min

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BITUMEN PENETRATION GRADE 30/45

SPECIFICATION OF BITUMEN PENETRATION GRADE 30/45

Bitumen 30/45	Test method	Unit	Specification
Penetration @25°C	IP 49	mm/10	30/45
Softening point °C	IP 59	°C	52/60
Kinematic Viscosity @ 135°C	IP 319	mm2/s	400 min
Flash point °C	IP 36	°C	240 min
Solubility is CS2(wt) %	IP 47	wt %	99 min

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BITUMEN PENETRATION GRADE 35/50

SPECIFICATION OF BITUMEN PENETRATION GRADE 35/50

Bitumen 35/50	Test method	Unit	Specification
Penetration @25°C	IP 49	mm/10	35/50
Softening point °C	IP 58	°C	50/58
Kinematic Viscosity @ 135°C	IP 370	mm2/s	400 min
Flash point °C	IP 36	°C	240 min
Solubility is CS2(wt) %	IP 47	wt %	99 min

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BITUMEN PENETRATION GRADE 50/70

SPECIFICATION OF BITUMEN PENETRATION GRADE 50/70

Bitumen 50/70	Test method	Unit	Specification
Penetration @25°C	IP 49	mm/10	50/70
Softening point °C	IP 58	°C	46/54
Kinematic Viscosity @ 135°C	IP 370	mm2/s	295 min
Flash point °C	IP 36	°C	230 min
Solubility is CS2(wt) %	IP 47	wt %	99 min

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BITUMEN EMULSION CSS-1

Property	Min	Max	Test method
Test on Emulsions			
Viscosity, Saybolt Furol at 25 °C, SFS	20	100	ASTM D5
Storage stability test, 24-h, %	_	1	ASTM D6930
Particle charge test	positive		ASTM D244
Sieve test, %	_	0.1	ASTM D6933
Cement mixing test, %		2.0	ASTM D6935
Distillation			
Residue, %	57	_	ASTM D244
Tests on residue from distillation test			
Penetration, 25°C (77°F), 100 g, 5 s	100	250	ASTM D5
Ductility, 25°C (77°F), 5 cm/min, cm	40	_	ASTM D113
Solubility in trichloroethylene, %	97.5	_	ASTM D2042

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PENETRATION GRADE
ASTM / AASHTO

Analysis	Unit	40-50 Limit	60-70 Limit	85-100 Limit	120-150 Limit	150-200 Limit	200-300 limit	Test Method
Density @ 25°C	Kg/m3	1010-1060	1010-1060	1000-1050	1000-1050	1000-1050	990-1040	ASTM D70 or D3289
Penetration @25°C	mm/10	40-50	60-70	85-100	120-150	150-200	200-300	ASTM D5
Softening Point	°C	49 min	46 min	42 min	38 min	36 min	32 min	ASTM D36
Ductility @ 25°C	cm	100 min	100 min	100 min	100 min	100 min	100 min	ASTM D113
Loss on heating	wt%	0.2 max	0.5 max	0.5 max	0.5 max	0.5 max	1 max	ASTM D6
Drop in penetration after heating	%	20 max	20 max	20 max	20 max	20 max	37 max	ASTM D5
Flash point	°C	232 min	232 min	218 min	218 min	218 min	177 min	ASTM D92
Solubility in Trichloroethylene	wt%	99.0 min	99.0 min	99.0 min	99.0 min	99.0 min	99.0 min	ASTM D2042
Spot test	_	Negative	Negative	Negative	Negative	Negative	Negative	ASTM D102
Viscosity @ 60°C	P	4000+800	2000+400	2000+200	450+90	250+50	200+50	ASTM D171
Viscosity@ 135°C	cSt	400 min	300 min	250 min	170 min	150 min	80 min	ASTM D170
Test on Residue From Thin Film Oven Test (ASTM D1754)								
Retained Penetration after (T.F.O.T), %	100	58 min	54 min	50 min	46 min	46 min	40 min	ASTM D5
Ductility. (25 °C),5cm/min, cm after TFOT	40	50	50	75	100	100	100	ASTM D113
Viscosity @ 60°C	97.5	20000 max	10000 max	5000 max	2250 max		2250 max	ASTM D2117
Viscosity @ 25°C		1010-1060	1010-1060	1010-1050	1010-1050	1010-1050	990-1040	ASTM D70 or D3289

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BITUMEN 60-70

Property	Unit	Limit	Test method
Test on Emulsions			
Densiy @ 25°C	kg/m3	1010-1060	ASTM D70 or D3982
Flash Point (Tag Open -cup). °C (°F)	66(150)	_	ASTM D3143
Distillate test: Distillate, volume percent of total distillate to 360 °C (680 °F)			ASTM D402
To 225 °C (437 °F)	_	10	
To 260 °C (500 °F)	15	55	
To 316 °C (600 °F)	60	87	
Residue from distillation to 360°C(680°F), percent volume by difference	67	_	
Tests on residue from distillation			
Penetration, 25°C (77°F), 100 g, 5 s	120	250	ASTM D5
Ductility, 25°C (77°F), cm	100	_	ASTM D113
Solubility in trichloroethylene, % by mass)	99.0	_	ASTM D2042
Water, % by volume)	_	0.2	ASTM D95

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BITUMEN VISCOSITY GRADES

GENERAL OF VISCOSITY GRADES

VG-10 BITUMEN: VG-10 IS WIDELY USED IN SPRAYING APPLICATIONS SUCH AS SURFACE-DRESSING AND PAVING IN VERY COLD CLIMATE IN LIEU OF OLD 80/100 PENETRATION GRADE. IT IS ALSO USED TO MANUFACTURE BITUMEN EMULSION AND MODIFIED BITUMEN PRODUCTS.

VG-20 BITUMEN: VG-20 IS USED FOR PAVING IN COLD CLIMATE & HIGH ALTITUDE REGIONS

VG-30 BITUMEN: VG-30 IS PRIMARILY USED TO CONSTRUCT EXTRA HEAVY DUTY BITUMEN PAVEMENTS THAT NEED TO ENDURE SUBSTANTIAL TRAFFIC LOADS. IT CAN BE USED IN LIEU OF 60/70 PENETRATION GRADE.

VG-40 BITUMEN: VG-40 IS USED IN HIGHLY STRESSED AREAS SUCH AS INTERSECTIONS, NEAR TOLL BOOTHS AND TRUCK PARKING LOTS IN LIEU OF OLD 30/40 PENETRATION GRADE. DUE TO ITS HIGHER VISCOSITY, STIFFER BITUMEN MIXES CAN BE PRODUCED TO IMPROVE RESISTANCE TO SHOVING AND OTHER PROBLEMS ASSOCIATED WITH HIGHER TEMPERATURE AND HEAVY TRAFFIC LOADS.

CHARACTERISTICS	VG-10	VG-20	VG-30	VG-40
ABSOULUTEVISCOSITY,60°C ,POISES, MIN	800	1600	2400	3200
INEMATIC VISCOITY, 135°C,CST, MIN	250	300	350	400
FLASH POINT, C, MIN	220	220	220	220
SOLUBILITY IN TRICHLOROETHYLENE,%, IN	99.0	99.0	99.0	99.0
SOFTENING POINT, C,MIN	40	45	47	50
TESTS ON RESIDUE FROM THIN FILM OVER TEST/RTFOT:				
I. VISCOSITY RATIO AT 60°C, MAX	4.0	4.0	4.0	4.0
II. DUCTILITY RATIO AT 25°C, CM,MIN,AFTER THIN FILM OVER	75	50	40	25

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